

Cyprus University of Technology

Department of Agricultural Sciences, Biotechnology & Food Science



Fruit production sector in Cyprus: Current prospects & future challenges

G.A. Manganaris

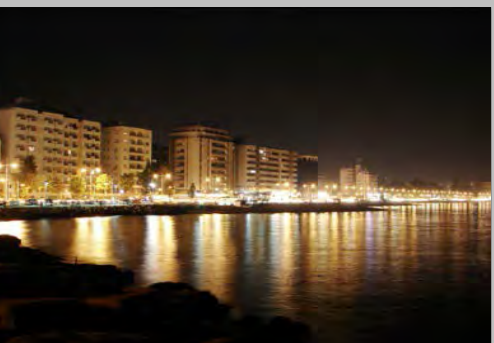
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Website: www.cut.ac.cy/fruitsciencesgroup

Cyprus



Lemesos: a cosmopolitan waterfront area, geographically located in the southern part of the island, numbering > 230,000 habitants.



KATHOLIEKE UNIVERSITEIT
LEUVEN



2004

Cyprus University of Technology [CUT]

- **Established:** 2003 by law, accepted its first students in **September 2007**
- **Six Faculties (11 Departments)**
- **Location:** old city of Lemesos (Limassol)
- **Student population:** ca. 2,712 students (2104 undergraduates 482 postgraduates and 126 doctorates)
- **Staff population:** 681 total (455 teaching and research – **100 elected faculty members** plus 60 transferred members; 226 administrative)
- **University buildings:** Mostly old and renovated buildings of the old city which constitute part of the city architectural heritage



Department of Agricultural Sciences, Biotechnology & Food Science



Faculty of Geotechnical Sciences and Environmental Management

Department of Agricultural Sciences, Biotechnology and Food Science
Department of Environmental Science and Technology

Crop Science & Technology

Food Science & Technology

Animal & Dairy Science



Andreas Katsiotis
Professor,
Department Chair



Dimitris Tsaltas
Assistant Professor



Despoina Miltiadou
Assistant Professor



George Manganaris
Assistant Professor



Vassilis Fotopoulos
Assistant Professor



Photis Papademas
Assistant Professor



Menelaos Stavrinides
Assistant Professor



Ouranios Tzamaloukas
Assistant Professor



Chryssoula Drouza
Lecturer



Nikolas Tzortzakis
Lecturer



Loukas Kanetis
Special Teaching Staff



George Botsaris
Special Teaching Staff



Iakovos Pantelides
Special Teaching Staff



Vlasios Goulas
Special Teaching Staff

CUT Fruit Sciences/Postharvest Group



FRUIT SCIENCES POSTHARVEST GROUP

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Home

We are part of the Department of Agricultural Sciences, Biotechnology and Food Science (ABF) at the Cyprus University of Technology (CUT), based in Lemesos, Cyprus. The Fruit Sciences/Postharvest Group was established by Dr. George Manganaris upon his recruitment at CUT in January 2009. Thanks to the synergies and support by post-doctoral research associate Dr. Vlasios Goulas (currently academic staff of the Department) the Group managed to set up and routinely run an array of assays related to qualitative, physicochemical and biochemical properties of fresh produce. In addition, taking advantage of the state-of-the-art core facilities of the Department, we have additionally employed high throughput analytical and molecular approaches, jointly with other Faculty members.



RECENT NEWS

III ISHS Horticulture in Europe Conference (Chania, Greece) 17/10/2016

COST Action FA1104 Training School 02/06/2015

Current technological aspects in strawberry fruit production 18/11/2014

Advances in apple and peach fruit production and novel strategies in breeding programs for the production of new cultivars

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Research Promotion Foundation

cost

[www.cut.ac.cy/fruitsciencesgroup]

Conferences

25th Conference of the Hellenic Society for Horticultural Science

Delegates: 330

Proceedings: Two volumes (15A,B) in printed form



Conferences

ISHS V Postharvest Unlimited Conference

Participants: 246 (out of 43 countries)

Proceedings: Acta Horticulturae 1079 (2015)



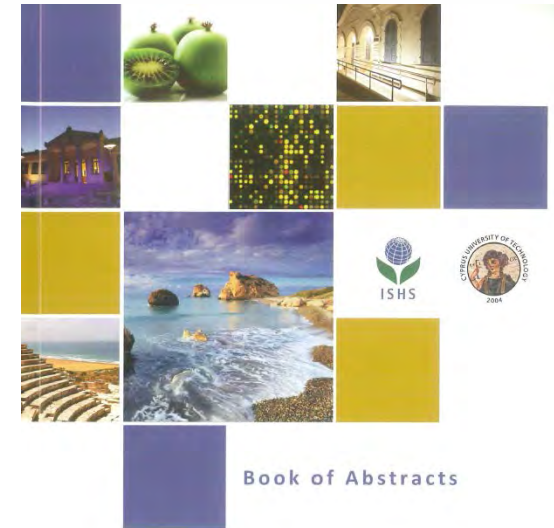
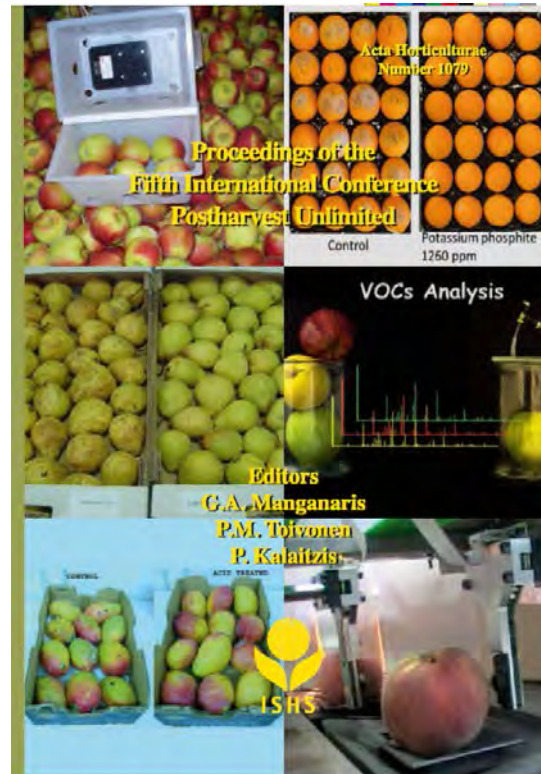
Postharvest Unlimited

ISHS International Conference

10-13 June 2014 • Cyprus



From left to right: Prof. Labavitch, Prof. Nicolai, Prof. Bouzayen and Dr. Ferguson during their keynote speeches.

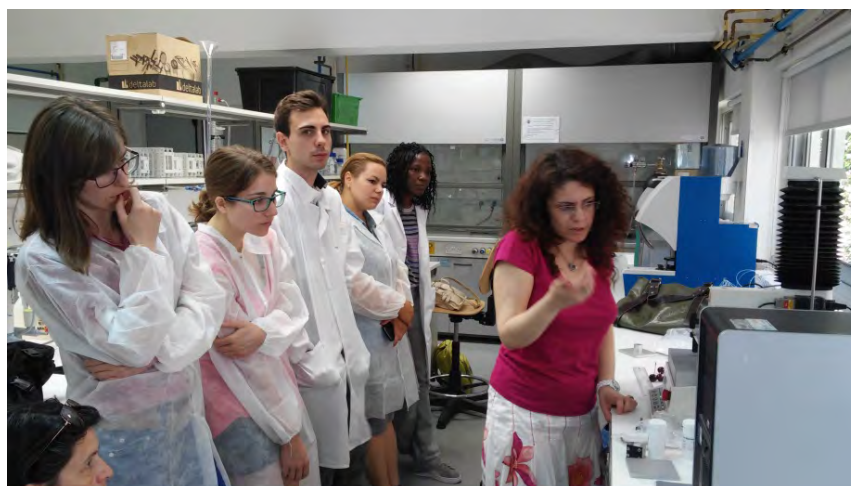


Postharvest Unlimited
ISHS International Conference
10-13 June 2014 • Cyprus

Training programme boosts European cherries

A training course entitled 'Qualitative, physicochemical and phytochemical indicators of cherry fruit' was held in Lemesos, Cyprus, between 2 and 4 June 2015. This short course was organised under the auspices of COST Action FA1104 'Sustainable production of high-quality cherries for the European market', and was attended by 15 researchers (mainly PhD students) from different parts of Europe.

As explained by George Manganaris, Assistant Professor at the Cyprus University of Technology, "COST Actions are intended for new and emerging science and technology fields and aim to build bridges between disciplines and research communities; they serve to spread knowledge to key stakeholders, including industry, in particular SMEs."



Seminars



invitation

**Tuesday,
25 September 2012
20:00 - 21:00 pm**

The Department of Agricultural Sciences, Biotechnology and Food Science of the Cyprus University of Technology organises a lecture on:

"Transcriptional regulation of drupe ripening: from transcriptomics to functional genomics"

Main Speakers:

Part I: 20:00-20:30 Claudio Bonghi,
Department of Agronomy, Food, Natural resources, Animals & Environment, University of Padova
"Introduction to transcriptomic approaches in fruit physiology"

Part II: 20:30-21:00 Livio Trainotti,
Department of Biology, University of Padova
"From transcriptomics to functional genomics"

Amphitheater
Pefkios Georgiades
Andreas Themistocleous Bldg.
CUT, Lemesos

Information:
Tel.: 25002307
www.cut.ac.cy




πρόσκληση

**Τετάρτη
12 Δεκεμβρίου 2012
19:00 - 21:00**

Το Τμήμα Γεωπονικών Επιστημών, Βιοτεχνολογίας και Επιστήμης Τροφίμων σας προσκαλεί σε εκδήλωση που διοργανώνει με τίτλο:

"Systems biology approaches in postharvest science"

Πρόγραμμα εκδήλωσης:

19:00-19:20 **Dr. Susan Lurie,**
Volcani Center, Israel, *Department of Postharvest Science, Israel*
Gene expression changes related to chilling injury in peaches

19:20-19:40 **Prof. Pietro Tonutti,**
Life Science Institute, Scuola Superiore Sant'Anna, Pisa, Italy
Innovations in storage technology and postharvest science

19:40-20:00 **Δρ. Παναγιώτης Κολιπής,**
Μικροβιολογικό Αρροσώμα Ινστιτούτου Κωνίκων, Ελλάδα
Gene regulatory networks during tomato fruit ripening

20:00-20:20 **Δρ. Αθανάσιος Μολισσάκης,**
Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης, Ελλάδα
Proteomics approaches and the potential application in fruit science

20:20-21:00 Συζήτηση

Παραρτηματικό
Τοκ. 25002307




invitation

**Thursday
12 September 2015
18:00-19:30**

The Department of Agricultural Sciences, Biotechnology and Food Science of the Cyprus University of Technology invites you at a lecture on:

Unleashing the genes between genomics and fruit breeding

Room 3, 1st floor,
Tassos Paradourakos Building,
Themistocleous and Ignatios corner,
Cyprus University of Technology

Speaker:
Dr. Françoise Lecomte,
Leader of the INRA Fruit genetics and breeding Group
Coordinator of the European project FruitBreedomics

Information:
Dr. George Margaritis
tel.: 25 002307






πρόσκληση

**Τρίτη
18 Νοεμβρίου 2014
18:00 - 19:00**

Το Τμήμα Γεωπονικών Επιστημών, Βιοτεχνολογίας και Επιστήμης Τροφίμων του Τεχνολογικού Πανεπιστημίου Κύπρου σας προσκαλεί σε διάλεξη με τίτλο:

Σύγχρονες τάσεις στη καλλιέργεια φρούτων

Ομιλητές:

18:00-18:20 Θεωρήση Παιπακοπούλου
Η καλλιέργεια της φρούτας Παρόν και μέλλον

18:20-19:00 Δρ. Ενώφελος Τσιμπιτσάκης
Τεχνολογία παραγωγής φρούτων σε παγκόσμιο επίπεδο

Amphitheater 2
Κτήριο Τάσος Παπαδόπουλος
Γωνία Θέμιδος και Ιγνατίου

Information:
Tel.: 25002307
www.cut.ac.cy




πρόσκληση

**Πέμπτη
28 Νοεμβρίου 2015**

Το Τμήμα Γεωπονικών Επιστημών, Βιοτεχνολογίας και Επιστήμης Τροφίμων του Τεχνολογικού Πανεπιστημίου Κύπρου σας προσκαλεί στις πιο κάτω θεαλήσεις με τίτλο:

**Amphitheater 1,
Κτήριο Τάσος Παπαδόπουλος
Θέμιδος και Ιγνατίου
γωνία, ΤΕΤΑΚ**

Ομιλητές:

19:00-19:45 Κατανομή (και) Φυτογεία - Τρίτη και Παναγιώτα Ζωγράφου
Καλλιέργεια - Θάλασσα και Προκλήσεις που τα βιοτεχνολογικά εργαλεία
Δρ. Κώστας Ιθακίτσας, Κιλήνη της Αριστοτέλειου Πανεπιστημίου Θεσσαλονίκης

19:45 - 20:30 Διαχείριση της σκληρότητας των καρπών με βάση την καλύτερη πρακτική εφαρμογή
Δρ. Κωνσταντίνος Κουλιανός, Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης

20:30-21:00 Ερωτήσεις-Συζήτηση

Παραρτηματικό
Δρ. Γεώργιος Μπαρμπαρίτης
τοκ. 25 002307




πρόσκληση

**Τρίτη
11 Νοεμβρίου 2014
18:00 - 19:00**

Το Τμήμα Γεωπονικών Επιστημών, Βιοτεχνολογίας και Επιστήμης Τροφίμων του Τεχνολογικού Πανεπιστημίου Κύπρου σας προσκαλεί σε διάλεξη με τίτλο:

Καινοτόμες τεχνολογίες στις καλλιέργειες μηλιάς και ροδακινιάς και σύγχρονες τάσεις στη δημιουργία νέων ποικιλιών

Ομιλητής: Dr. Ignasi Iglesias

**Amphitheater 2
Κτήριο Τάσος Παπαδόπουλος
Γωνία Θέμιδος και Ιγνατίου**

Η διάλεξη θα δοθεί στην αγγλική γλώσσα.

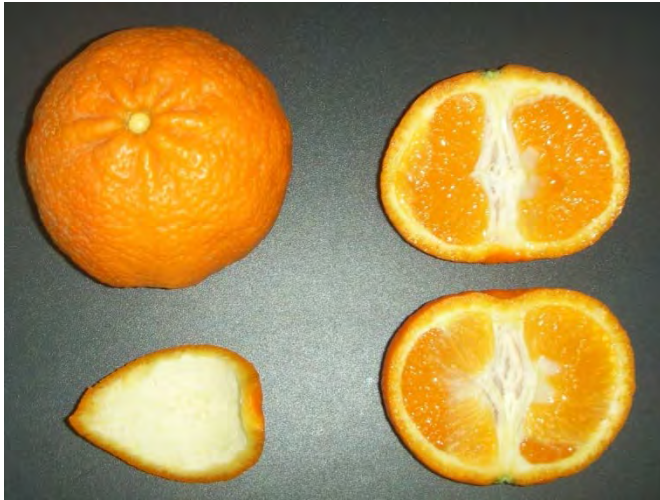
Information:
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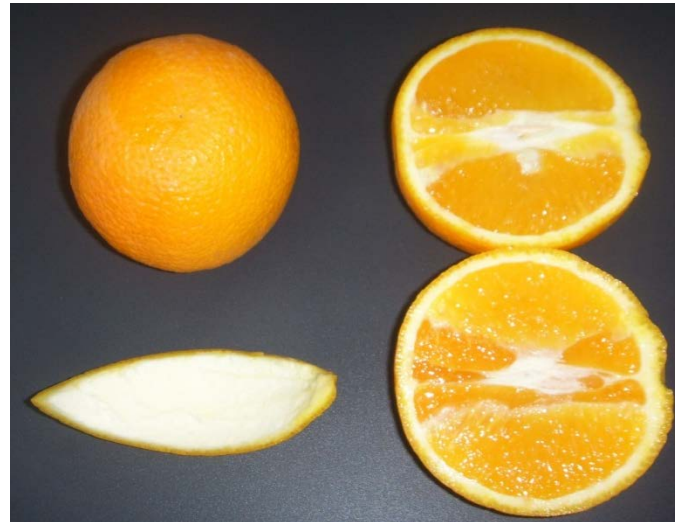
Citrus fruit crops

Production Destination	Variety	Production (tons)
Industry (Juices ets)	Lemons	2.444,68
	Grapefruits	4.039,76
	Red fleshed Grapefruits	1.844,53
	Mandora	5.923,015
	Oranges	4.371,815
	Nova	531,49
	Murgot	31,745
	Clementine	18,605
	Total	19.205,640
Exports	Lemons	1.659,925
	Grapefruits	1.829,955
	Red fleshed Grapefruits	5.097,88
	Mandora	10.016,244
	Oranges "Valentsia"	3.872,614
	Oranges "Navel"	12,004
	Nova	1.139,257
	Murgot	111,095
	Total	23.738,976
Domestic Consumption (evaluation)	Lemons	5.500
	Grapefruits	2.500
	Oranges	18.000
	Mandarinoids	1.000
	Clementine	3.500
	Mandarins "Arakapa"	3.500
	Nova	50
	Pomelo	10
	Total	34.060
Exceptional support measures for the Citrus tree producers due to the Russian Embargo		
Measure 1: Early harvest	Mandora	13.289
	Oranges "Valentsia"	2.261
	Total	15.550
Measure 2&3: Withdrawals for free distribution and other destinations	Mandora	111
	Oranges "Valencia"	482
	Oranges "Navel"	74
	Nova	129
	Clementine	274
	Total	1.070
Total Production		93.624,616

Citrus fruit crops



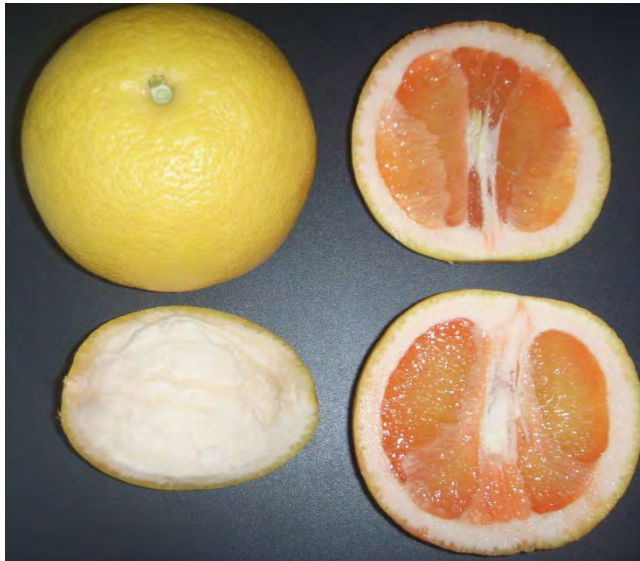
Mandora (Ortanique)



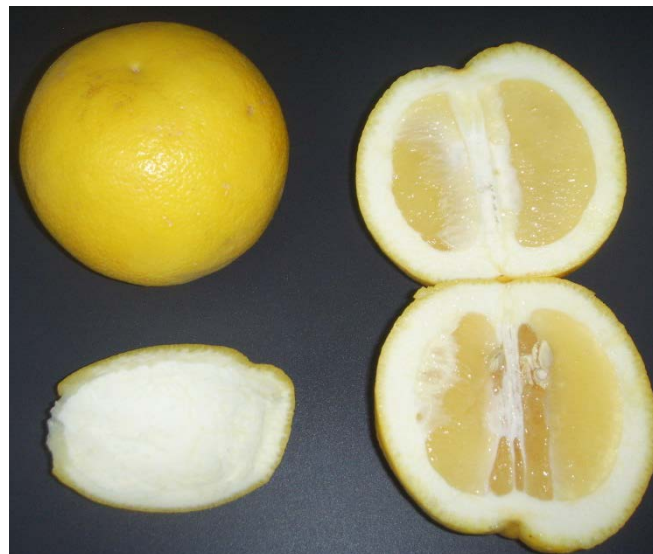
Valencia



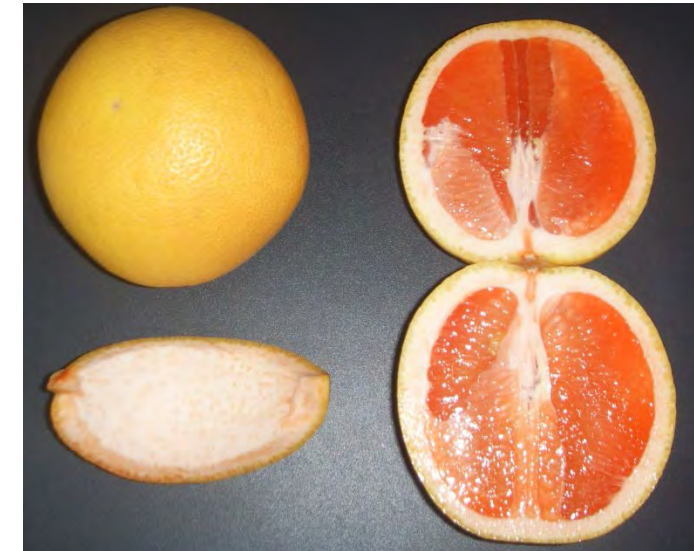
Lapithiotiki



Rio Red



Marsh Seedless



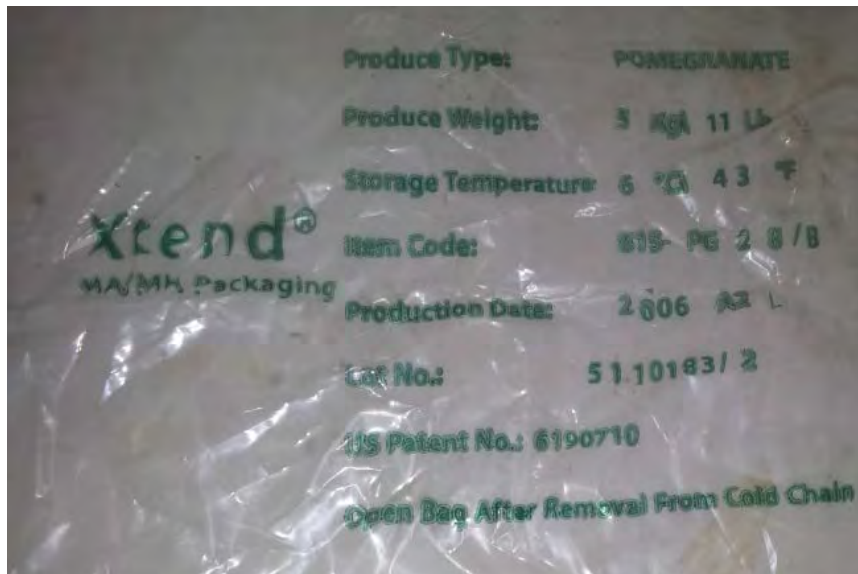
Star Ruby

Temperate fruit crops

Fruits	Acres	Production (tons)
Cherries	3215	1218
Apricots	1619	1580
Plums (4)	4000	3509
Apples (2)	8797	6701
Peaches (3a)	4147	5529
Nectarines (3b)	1267	1458
Kiwifruit	22	14
Grapes (1)	9167	9655

- *All production is consumed domestically. Few grapes (organic produce) is being exported to Germany and Austria every year*
- *Imports of pears – apples – peach – kiwifruit*
- *Old-fashioned training systems – lack of irrigated water – uneven fields - lack of interactive storage systems*

(In)appropriate packaging



Advanced storage protocols & interactive storage systems















What can be cultivated in Cyprus;

- Temperate fruit crops (apple, peach, plum, apricot, cherry)
- Sub-tropical fruit crops (Citrus, avocado, loquat)
- Tropical fruit crops (banana)
- High-added value product (strawberry, pomegranates)



What should be cultivated in Cyprus;

Always consider the 'economical maturity'



Brisbane, Australia



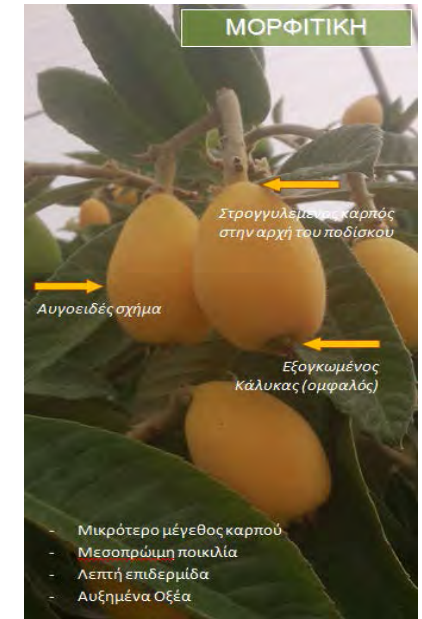
Packing house in Cyprus

What should be cultivated in Cyprus;

- Early ripening (**loquat, strawberry, cherry, pomegranate**)
 - Commodities with improved know-how (e.g. **'Lapithiotiki' lemons**)
 - Added value products (**loquat, avocado**)
-



Loquat



Strawberry production period

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<u>(United Kingdom) past</u>											
				OF	OF						
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<u>(United Kingdom) present</u>											
				T	T	T	T	T	T		
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<u>The Netherlands</u>											
G1	G1	G2	G2	G2	T	T	T	T	T	G1	G1
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<u>Southern Europe</u>											

Strawberry

Greece case study:

- Cultivated area: **120 hectares (2002) - 1200 hectares (2009)**
- **> 75,000,000 plants** needed per year, **5,000,000** of them are being produced in Greece
- **95%** of production is being exported – mainly in Russia

Prospects & Challenges

- Extension of production (October-May)
- Advance protocols (key issue: balance plants)
- **Net profit: €30,000/hectare**

The image shows a screenshot of the Spanish newspaper 'elEconomista.es'. The main headline is 'El Supremo puede anular otros 8 canales de televisión'. Other visible headlines include 'PUTIN CIERRA LAS FRONTERAS A LOS ALIMENTOS DE LA UE', 'La deuda de las administraciones marca récord en el 96,5% del PIB', and 'Las bolsas eluden un desplome al abrir Kiev la puerta a una consulta'. The page also features a market data section with various indices and a small table of market movements.

Cultivation of strawberry in Greece

- 65000 plants per hectare
- **Camarosa** is the leading cultivar (60%)
- 60 days ahead with the use of **tray plants** instead of frigo plants
- Total production per plant: 518 g (Camarosa, short day)
- Improve techniques and selection of appropriate cultivars (**Fortuna** starts production from week 45)
- Extension of harvest period (October-May)
- **Postharvest issues?**



EU strawberry export



Partner	Value in EUR	Volume in T	Percentage (of volume)
Russia	23.225.846	14.492	74,7%
Moldova	2.923.894	2.161	11,1%
Serbia	1.344.004	1.137	5,9%
Ukraine	851.668	627	3,2%
FYROM	636.119	408	2,1%
Croatia	411.377	393	2,0%
Belarus	105.539	84	0,4%
Bosnia and Herzegovina	56.336	74	0,4%
Montenegro	13.248	12	0,1%
Albania	16.382	11	0,1%
TOTAL	29.584.413	19.397	100,0%

Συνοπτικά, το 2014 οι εισαγωγές φράουλας στη Ρωσία και το μερίδιο αγοράς της κάθε χώρας κυμάνθηκαν ως εξής:

A/A	ΧΩΡΑ	ΜΕΡΙΔΙΟ
1	ΕΛΛΑΔΑ	32,4%
2	ΤΟΥΡΚΙΑ	17,6%
3	ΙΣΠΑΝΙΑ	13,3%
4	ΠΟΛΩΝΙΑ	10,8%
5	ΣΕΡΒΙΑ	8,4%
6	ΑΛΛΕΣ ΧΩΡΕΣ	17,5%
	ΣΥΝΟΛΟ	100%





Carob [*Ceratonia siliqua*]

- Carobs have been grown for human consumption and animal feed and lately for the extraction of **carob bean gum**.
- In the period 1962-1966 there were 16.000 hectares of carob groves on fruit bearing condition on the island, but the continuous decline in carob demand from the 1960's onwards shrank the carob acreage to 1.700 hectares by 2012, and a large percentage of the current area is abandoned.
- Nowadays, there is a again a growing intrest for carob plantations, a 100% exportable product



Carob [*Ceratonia siliqua*]



Carob exports [2013-2014]

Country	Whole Carobs	Grounded Carobs	Carob seeds	Carob juice	Total/kilos
Egypt	1286650	2680850			3967500
U.S.A.		314000			314000
Israel		172640			172640
China			100		100
Australia				64	64
United Kingdom	140			30	170
Spain			437245		437245
Italy			283735		283735
Holland		125000			125000
Total/kilos	1286790	3292490	721080	94	<u>5300454</u>

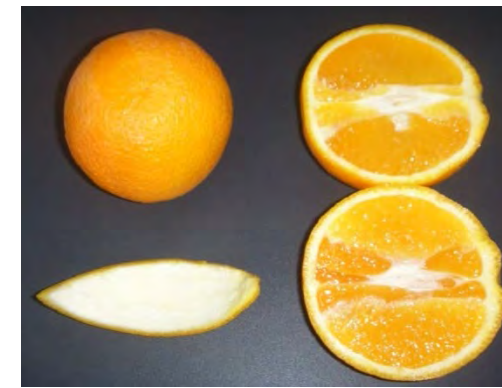
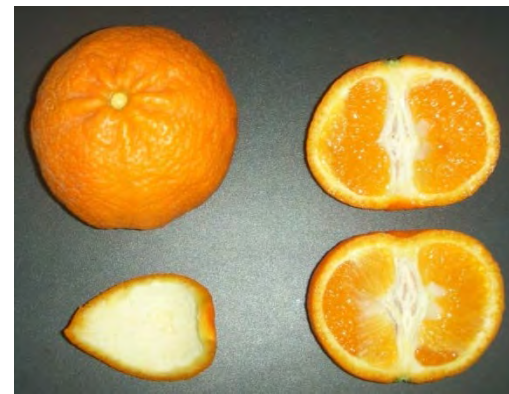
Carob gum is being extracted from seeds and is used as food additive (E410)



Exploring the phytochemical content and the antioxidant potential of *Citrus* fruits grown in Cyprus

V. Goulas, G.A. Manganaris*

Cyprus University of Technology, Department of Agricultural Sciences, Biotechnology and Food Science, Lemesos 3603, Cyprus



International Journal of Food Science and Technology 2014

Original article

Comparative polyphenolic antioxidant profile and quality of traditional apple cultivars as affected by cold storage

Vlasios Goulas,^{1†} Panayiotis Kourdoulas,^{1†} Fedon Makris,¹ Maria Theodorou,¹ John K. Fellman^{1,2} & George A. Manganaris^{1*}



Lortiko



Kathista



Phytochemical content, antioxidants and cell wall metabolism of two loquat (*Eriobotrya japonica*) cultivars under different storage regimes

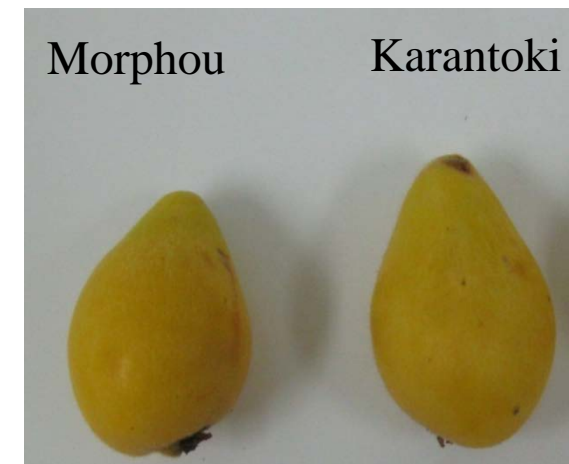
V. Goulas^a, I.S. Minas^a, P.M. Kourdoulas^a, A.R. Vicente^{b,c}, G.A. Manganaris^{a,*}



^a Cyprus University of Technology, Department of Agricultural Sciences, Biotechnology and Food Science, 3603 Lemesos, Cyprus

^b Centro de Investigación y Desarrollo en Crioteología de Alimentos, Facultad de Ciencias Exactas, CONICET-UNLP, 47 y 116, La Plata CP 1900, Argentina

^c Laboratorio de Investigación en Productos Agroindustriales, Facultad de Ciencias Agrarias y Forestales Universidad Nacional de La Plata, Calle 60 y 119, La Plata CP 1900, Argentina



Morphou

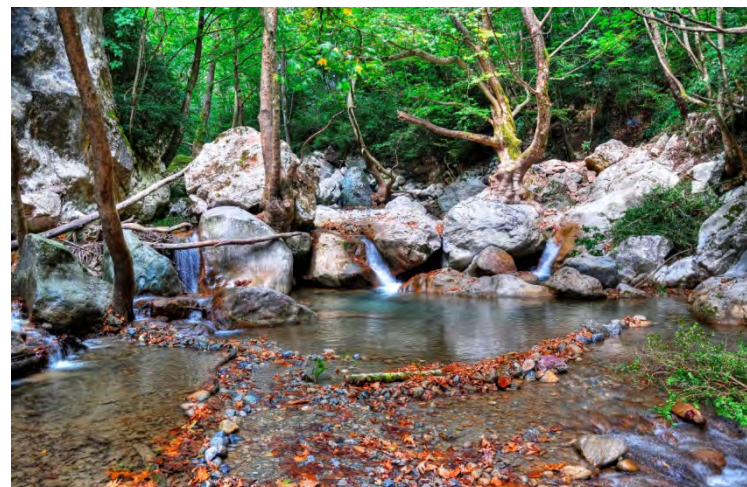
Karantoki

Cherry 2016, Naousa, Greece / 4-8 April 2016



COST | *European Cooperation in Science and Technology*

Sustainable production of high-quality cherries for the European market





3rd Symposium on Horticulture in Europe

17 - 21 October 2016
CHANIA - GREECE



- Home
- Scientific Programme
- Committees
- Call for Papers
- Conference Venue
- Accommodation
- Travel
- Sponsors
- Contact
- Registration

III International Symposium on Horticulture in Europe - SHE2016

Chania, Crete (Greece), October 17-21, 2016



- Scientific Programme
- Scientific Committee
- Sponsorship Opportunities
- Registration fees
- Important Dates

<http://she2016.org/>



Registration fees

	Early bird Registration (Before 1/3/16)	Late Registration
ISHS Member	340€	410€
Non ISHS Member	410€	480€
Student	230€	280€
Accompanying person	170€	220€
One-day registration	130€	180€
Gala Dinner	40 €	

